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*Serial No.: 09/931230*

*Art Unit: 2141*

*Examiner: Bayard*

*Decker No.: AUS9 2001 0311 US1*

## REMARKS/ARGUMENTS

Claims 1-20 were presented and examined. The Examiner rejected claims 1 and 6-7 under 35 USC § 103(a), as being unpatentable over Narad *et al.* (U.S. Patent No. 5,692,197), hereinafter "Narad", in view of Muller (U.S. Patent No. 4,578,774), hereinafter "Muller", in further view of Dahlin *et al.* (U.S. Patent Application No. 2002/0184403), hereinafter "Dahlin". The Examiner rejected claims 1 and 4 under 35 USC § 103(a), as being unpatentable over Narad in view of Muller, further in view of Dahlin, and further in view of Lowery *et al.* (U.S. Patent Application No. 2002/0107935), hereinafter "Lowery". The Examiner rejected claims 3 and 5 under 35 USC § 103(a), as being unpatentable over Narad in view of Muller, further in view of Dahlin, further in view of Lowery, and further in view of Comeau *et al.* (U.S. Patent Application No. 2002/0091826), hereinafter "Comeau". Claims 8, 11, 13, 16, and 20 were rejected under 35 USC § 103(a), as being unpatentable over Rankin *et al.* (U.S. Patent No. 5,613,071), hereinafter "Rankin", in view of Muller and further in view of Dahlin. Claims 9 and 14 were rejected under 35 USC § 103(a), as being unpatentable over Rankin in view of Muller, further in view of Dahlin, and further in view of Lowery. The Examiner rejected claims 10, 15, and 18-19 under 35 USC § 103(a), as being unpatentable over Rankin in view of Muller, further in view of Dahlin, and further in view of Narad. Claims 12 and 17 were rejected under 35 USC § 103(a), as being unpatentable over Rankin in view of Muller, further in view of Dahlin, and further in view of Futral (U.S. Patent Application No. 2004/0174814), hereinafter "Futral". In this response, no claim amendments are proposed. Claims 1-20 remain pending.

## Specification amendments

Amendments in the specification have been made as indicated to correct erroneous reference numerals and a grammatical error. These amendments do not introduce new matter, are not intended to alter the scope of the claims, and are not for any purpose related to patentability.

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**Drawing amendments**

Amendments to two drawing sheets are proposed to correct a typographical error in FIG. 5 and to conform FIG. 6 to the description in the specification. These amendments do not introduce new matter, are not intended to alter the scope of the claims, and are not for any purpose related to patentability.

**Claim rejections under 35 USC § 103(a)**

The Examiner rejected claims 1 and 6-7 under Section 103(a) as being unpatentable over Narad in view of Muller, in further view of Dahlin. With respect to the rejection of independent claim 1, Applicant respectfully traverses the rejection because the cited references fail to teach or suggest all of the claim limitations.

A Section 103(a) rejection is proper only if the cited references fail to teach or suggest all of the claimed limitations. MPEP 2143. The Section 103(a) rejection of independent claim 1 is improper because the references fail to teach or suggest permitting access to a deactivated server's memory and retrieving a file from the deactivated server's file cache in response to a request received by another server. This is a key feature of the invention. The Examiner correctly acknowledges that Narad in view of Muller fail to teach responsive to deactivating a selected server, permitting another server to access the selected server's system memory and responsive to a request received by another server for a file stored in the selected server's file cache, retrieving the file from the selected server's file cache. Therefore, the teaching or suggestion for these claimed elements must be found in the only other cited reference, Dahlin. Dahlin, however, contains no teaching or suggestion enabling one server in a cluster access to a deactivated server's file cache for purposes of fulfilling a request for a file that is in the deactivated server's cache. Dahlin contains no such teaching or suggestion because Dahlin is not concerned with power conservation by deactivating servers. The word "power," for example, does not occur in Dahlin. Dahlin is a performance optimizing invention in which the placement of data objects within one or more caches is determined based on bandwidth constraint limitations. Dahlin is solely concerned with performance enhancement by way of optimally locating data objects

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within a set of one or more data caches to minimize the effects of bandwidth constraints. One cannot find even a single mention of or reference to the concept of power conservation.

In sharp contrast, the present invention as recited in claim 1, embraces the concept of power conservation by explicitly reciting the deactivation of one or more servers. Claim 1 recites a method of achieving the best possible performance that is consistent with the power conservation techniques. The present application acknowledges that there is a tension between power conservation via server deactivation and performance (see, e.g., page 2, line 18 through page 3, line 6 of the Applicant's specification). Claim 1 recites a performance enhancing improvement that is compatible with power conservation principles. By reciting the ability to access the file cache of a deactivated server, claim 1 provides optimized performance (reduced latency) without abandoning the important objective of minimizing power consumption within a server cluster.

One skilled in the art having the benefit of Dahlin would not be motivated to modify Narad and Muller to provide access to the system memory of an otherwise deactivated server because Dahlin does not identify power conservation as an objective. To the contrary, a skilled practitioner would read Dahlin as suggesting that performance improvement is the paramount consideration in the design of a local area network and that anything that limits performance or increases bandwidth limitations is to be avoided.

The Examiner rejected independent claims 8 and 13 under 35 USC § 103(a), as being unpatentable over Rankin in view of Muller and further in view of Dahlin. The Examiner correctly acknowledges that Rankin in view of Muller fails to teach or suggest NIC code means for enabling other servers to retrieve a file from the system memory of a deactivated service device. Supporting the rejections of claim 8 and 13, the Examiner again relies on Dahlin for teaching or suggesting these elements of the rejected claims. For reasons analogous to the reasons stated above with respect to claim 1, Applicant respectfully submits that Dahlin does not teach or suggest these limitations.

In addition to the foregoing, Applicant would respectfully submit that Muller, which is cited in the rejection of each of the pending claims, is non-analogous art in the context of claims directed towards a technique and system for improving performance in a server cluster. "In order

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to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." MPEP 2141.01(a) quoting *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

Muller is a method for limiting the erasing and writing of data in a non-volatile memory of a an electronic postage meter. (See abstract). What constitutes analogous art in the electrical fields was discussed in *Wang Laboratories, Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993). In *Wang*, the Federal Circuit determined that patent claims directed to single in-line memory modules (SIMMs) for installation on a printed circuit motherboard for use in personal computers was not necessarily analogous to a SIMM for an industrial controller merely because they both related to memories. In *Wang*, the reference was found to be in a different field of endeavor at least in part because the memory modules of the claims at issue were intended for personal computers and used dynamic random-access-memories, whereas the reference SIMM was developed for use in large industrial machine controllers and only taught the use of static random-access-memories or read-only-memories.

In the context of the present claims and the Muller reference, Applicant would respectfully submit that differences in the application and implementation of the present claims and the application and implementation of Muller are significantly greater than the distinctions between the two types of SIMMs at issue in *Wang*. Muller, for example, is solely concerned with non-volatile memories for use in electronic postage meters. The claims under consideration, on the other hand, are directed at a system memory (i.e., a dynamic RAM storage element) of a server in a server cluster. Because the differences in structure and function between Muller's postage meter NVM's and the server system memory and file cache of the present invention are readily apparent, Applicant submits that Muller is non-analogous art. Accordingly, Applicant would respectfully request the Examiner to withdraw Muller as a reference.

In addition to the foregoing, Applicant respectfully traverses the Section 103(a) rejection of dependent claims 2, 9, and 14. Each of these independent claims recites a limitation in which a server selected for deactivation broadcasts a directory of its file cache prior to powering down. The Examiner relies on Lowery for teaching or suggesting this limitation. Lowery, however,

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does not teach or suggest the broadcasting of a file cache directory prior to powering down because Lowery does not contemplate the concept of permitting access to a cache after a cache is deactivated. Lowery teaches that a cache may broadcast an activation or deactivation message before activating or deactivating. There is no indication in Lowery, however, that its deactivation message contains a directory of the cached contents. To the contrary, Lowery clearly conveys the concept that a deactivated cache is simply unavailable until it is later activated. Thus, for example, Lowery teaches that, upon deactivating a cache module of one client, it may be necessary for the cache content associated with that client to be redistributed to the other clients (See paragraph [0076] of Lowery). This teaching is clearly inconsistent with the concept of permitting access to the deactivated cache. Because Lowery does not envision accessing a deactivated cache, there would be no benefit to broadcasting a directory of a cache that is unavailable. Accordingly, Applicant would submit that Lowery does not teach or suggest the limitation for which the Examiner cited Lowery and Applicant would respectfully request the Examiner to reconsider and withdraw the rejection of claims 2, 9, and 14.

In addition to the foregoing, Applicant respectfully traverses the rejection of dependent claim 5. Claim 5 recites a limitation in which server selected for deactivation deletes a directory of the its file cache contents from the memories of the other servers. The Examiner indicates that this limitation is taught by Narad. The portion of Narad cited by the Examiner in support of this assertion reads:

Upon entering the sleep state, the computer system sets the appropriate status/semaphore bits corresponding to its processor module(s). Important data of the processor module(s) including kernel state information is stored in a stable memory. Any cache memory of the processor module(s) is flushed into a main memory of the computer system. (Narad column 2, lines 45-50).

Apparently, then, the Examiner equates flushing cache memory contents into main memory with deleting a directory of the selected server's file cache contents from the memories of other servers. Applicant respectfully disagrees for reasons that seem apparent. Flushing the contents of a cache into main memory means that the main memory contents are updated with the contents of the cache. This has nothing to do with deleting directories of the cache contents from other

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servers in a cluster. Accordingly, Applicant would respectfully request the Examiner to reconsider and withdraw the rejection of claim 5.

Finally, in addition to the foregoing, Applicant respectfully traverses the rejection of dependent claims 6, 10, and 15. Each of these claims recites a limitation in which the server selected for deactivation transitions the selected server's processors to a low power state while maintaining power to the selected server's NIC and system memory. In rejecting each of these dependent claims, the Examiner states that Narad discloses this limitation. The portion of Narad cited by the Examiner in support of this assertion reads:

In accordance with the invention, each computer system of the computer network is capable of independently initiating a transition into a power-conserving mode, i.e., a "sleep" state, while keeping the respective network interface "alive" and fully operational. Subsequently, each computer system can independently transition back into a fully operational state, i.e., an "awake" state, when triggered by either a deterministic or an asynchronous event. As a result, the sleep states of the computer systems are transparent to the computer network. (Narad, column 2, lines 11-19).

This portion of Narad merely recites the well-known concept of wake-on-LAN. It does not teach or suggest maintaining power to system memory. To the contrary, the terminology "power-conserving mode," in the absence of any clarifying or limiting language, clearly suggests that system memory power is powered down (and therefore unavailable to other network devices). Accordingly, Applicant would respectfully request the Examiner to reconsider and withdraw the rejection of dependent claims 6, 10, and 15.

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### CONCLUSION

In this response, Applicant has addressed the Examiner's claim rejections under 35 USC § 103(a), which is the only issue in the case. Accordingly, Applicant believes that this response constitutes a complete response to each of the issues raised in the office action. Consistent with the accompanying remarks, Applicant believes that the pending claims are in condition for allowance. Accordingly, Applicant would request the Examiner to withdraw the rejections, allow the pending claims, and advance the application to issue. If the Examiner has any questions, comments, or suggestions, the undersigned attorney would welcome and encourage a telephone conference at 512.428.9872.

Respectfully submitted,

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